How Much Could You Save by Idling Less?

Argonne NATIONAL LABORATORY

Instructions: In each row, start at the left and fill in the blanks with information about your equipment and costs. Then multiply or divide as shown. Some answers are used again. Where you see an arrow, copy the answer into the blank at the end of the arrow, so you can use it in the next step.

Calculate Costs for Avoidable Idling

1 How much fuel is used for idling? If you don't know, look up the number in the table below. ____ gallons/hour **x** Realistically, how many hours each year might you use IR devices instead of idling?[a] ____ hours/year **x** What is the price of diesel fuel? $ ____ /gallon **=** **Avoidable Idling Fuel Costs** $ ____ /year **+**

2 ____ gallons/hour **x** ____ hours/year **x** What is your average fuel economy? ____ miles/gallon **=** "Miles of idling"[2] (idling is like putting miles on your engine) ____ miles/year

3 How much does an oil change cost? $ ____ /oil chg. **÷** How many miles between oil changes? ____ miles/oil chg. **=** $ ____ /mile **x** "Miles of idling" ____ miles/year **=** **Preventive Maintenance Costs**[1] $ ____ /year **+**

4 How much does an engine overhaul cost? $ ____ /overhaul **÷** How many miles between overhauls? ____ miles/overhaul **=** $ ____ /mile **x** "Miles of idling" ____ miles/year **=** **Overhaul Costs**[1] $ ____ /year **=**

5 Add right-hand column **=** **Total Avoidable Idling Costs** $ ____ /year

Calculate Costs for Idling Reduction (IR)

6 How much fuel is used by the IR device? ____ gallons/hour **x** How many hours each year could you use IR devices instead of idling?* ____ hours/year **x** Price of diesel fuel (should equal price listed in line 1) $ ____ /gallon **=** Fuel cost for IR device $ ____ /year

7 Maintenance cost for IR device $ ____ /year **+** $ ____ /year **=** **Operating Cost for On-board IR Device** $ ____ /year

8 Cost per hour to plug into EPS[b] $ ____ /hour **x** Enter hours plugged into EPS* ____ hours/year **=** Cost to plug in $ ____ /year **+** $ ____ /year **=** **Total Operating Costs for IR** $ ____ /year

Calculate Savings from IR

9 Capital cost of on-board IR device $ ____ **÷** **Savings** Line 5 – Line 8 $ ____ /year saved **=** **Payback Time** ____ years

[a] IR: Idling Reduction [b] EPS: Electrified Parking Space * Total number of hours from lines 6 and 8 should equal the number of hours in line 1

How much fuel is used for idling (gallons/hour)?

Locate your idling engine RPM and the percentage of time you run your air conditioning (AC) while idling. The corresponding number is approximately how much fuel you use to idle. For example, 800 RPM with no air conditioning consumes about 0.64 gallons of fuel an hour.[1,2]

RPM	AC off	AC on 50%	AC on
800	.64 gal/h	.70	.76
900	.73	.79	.85
1000	.81	.87	.94
1100	.92	.98	1.05
1200	1.03	1.09	1.15

1 "Analysis of Costs from Idling and Parasitic Devices for Heavy Duty Trucks," Technology and Maintenance Council Recommended Practice Bulletin 1108; issued 3/95 (reprinted 2003 by TMC/ATA)

2 Lutsey, N.P., J.P. Wallace, C.J. Brodrick, H.A. Dwyer, and D. Sperling, "Modeling Auxiliary Power Options for Heavy-Duty Trucks: Engine Idling vs. Fuel Cells." *Society of Automotive Engineers* 2004-01-1479, October 2004.

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